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10/686,323	10/15/2003	Juan Manuel Cruz-Hernandez	IMM150	8263

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PATENT DEPARTMENT (51851)
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EXAMINER	
MA, CALVIN	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/686,323	CRUZ-HERNANDEZ ET AL.	
	Examiner	**Art Unit**	
	Calvin Ma	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged.

Information Disclosure Statement

1. The references listed on the Information Disclosure Statement filed on April 22, 2004, September 29, 2004, July 26, 2004, January 10, 2005, June 26, 2006 have been considered by examiner; see attached PTO-1449.

Claim Objections

2. Claims 12-15 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation "the switch" does not correspond to any elements of the claim 11 which the said claims are depended on.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Tarr et al. (US Patent: 6,084,587).

As to claim 1, Tarr discloses a method comprising:

defining a first cell (i.e. the sub-construct of virtual object accessible by the user via input), the first cell comprising a first parameter (i.e. one of the parameters of the sub-construct, such as acceleration, viscosity) representing a first haptic effect (i.e. the parameters that factor into how the haptic interactions are applied to the user, when the user interacts with the object in the virtual space, which represents a haptic effect) (see Fig. 2, Col. 5, Lines 55-65);

mapping a first location (i.e. the location of a point in the virtual space) of a matrix (i.e. virtual space that makes up the displacement of a higher level object that the first cell (sub-construct) is a part of) (see Col. 21, Lines 4-10) with the defined first cell (i.e. the point in the virtual space that the cell interact with in forming the higher level object) (see Fig. 1-2, Col. 5, Lines 40-55);

and mapping a second location of the matrix with the defined first cell (i.e. the location of a point in the virtual space that complement the first point in defining the location of the cell with respect to the higher level object) (see Fig. 1-2, Col. 5, Lines 40-55).

As to claim 11, Tarr teaches a method comprising: providing a cell (a virtual object) comprising an arc and first and second edges (i.e. since the virtual object can be a sum of various other sub-construct object such as a line or shapes) (see Fig. 1-3, Col. 5, Lines 40-55, Col. 6, Lines 1-23);

providing a plurality of force vectors within the cell, the force vectors directed radially toward the first and second edges (i.e. the various parameter that is able to be assigned to the objects such as viscosity and acceleration are force vectors, since during the user interactions these elements direct the forces that is applied the user; also since the force must be applied from a point in the virtual space the object in virtual space when interacting with the user will direct force in a radial manner from a give point) (see Col. 5, Lines 55-65)

and delimiting a corner of the cell (i.e. changing the volume of the cell, such as removing piece as the volume to form shape) (see Fig. 3, Col. 6, Lines 5-8), the corner formed by an arc joining the first and second edges (i.e. since the cell is formed by removing some piece of volume a round feature can natural form that joins the first and second edge that forms the original shape) (see Fig. 3, Col. 6, Lines 5-8).

As to claim 16, Tarr teaches a switch (i.e. a virtually constructed object that function as a virtual switch activating some function in the real world) comprising:

a first primary channel (a channel for object movement in translation operations) disposed about a first axis (x-axis); a second primary channel (a channel for object movement in translation operations) disposed about a second axis (y-axis); a first secondary channel disposed proximate to the first primary channel (i.e. the secondary channel which is disposed proximate to the primary channel in a virtual system is the path that the object can take during translations about the x axis);

and a second secondary channel disposed proximate to the second primary channel(i.e. the secondary channel which is disposed proximate to the primary channel in a virtual system is the path that the object can take during translations about the y axis) (i.e. since the object is able to be change by the user in the virtual space in has a switch function to switch its position where in any direction and orientation and there in multiple channels) (see Fig. 1b, Col. 6, Lines 24-38).

As to claim 2, Tarr teaches the method of claim 1, further comprising communicating the defined first cell from a first processor (352) to a second

processor (354) (i.e. since the haptic rendering processor 352 must communicate with display processor 354 to proper display the cell on the display system) (see Fig. 16, Col. 21 Lines 40-55, Col. 22, Lines 1-13).

As to claim 3, Tarr teaches the method of claim 2, further comprising: defining a second cell (i.e. another sub-construct of an object in the virtual space), the second cell comprising a second parameter (i.e. another one of the parameters of the sub-construct, such as friction, texture) representing a second haptic effect (i.e. the parameter that factor into how the haptic interactions are applied to the user, when the user interacts with the object in the virtual space, which represents another type of haptic effect) (see Fig. 2, Col. 5, Lines 55-65).

As to claim 4, Tarr teaches the method of claim 3, wherein the first and second cells are defined by the first processor (352) (i.e. since the first and second cell are both a member of construct, it must be processed by the haptic rendering processor 352 to properly incorporate there haptic feedback characteristics) and the first, second, and third locations are mapped by the second processor (354) (i.e. since the proper display of the virtual points requires the use of the display processor 354) (see Fig. 16, Col. 21, Lines 32-50).

As to claim 5, Tarr teaches the method of claim 3, wherein the third location is disposed between the first and second locations (i.e. since the sub-construct second cell can be a component of the first cell, the third location in that case can be between the first and second location) (see Fig. 2, Col. 5, Lines 55-65).

As to claim 6, Tarr teaches the method of claim 1, wherein the matrix comprises a square shape (i.e. the matrix, a higher level object can be any kind of polygon, which include a square shape) (see Col. 6, Lines 1-24).

As to claim 7, Tarr teaches the method of claim 1, wherein the matrix comprises a circular shape (i.e. the matrix, a higher level object can be circles) (see Col. 6, Lines 6-7)

As to claim 8, Tarr teaches the method of claim 1, wherein the first cell comprises a first detent and the second cell comprises a second detent (since the during a collision with the cells (sub-constructs) the user are prevented from penetrate the object, the cell comprises detent that allow limitation of user movement in the virtual space) (see Col 7, Lines 20-34)

As to claim 9, Tarr teaches the method of claim 3, further comprising providing an actuator in communication with the first, second, and third locations (i.e. since the haptic feedback to the user is location sensitive to allow the user interaction with object in form of collision, the actuator must communicate with the location of the contacts to properly interact with the user), the actuator operable to provide a computer-modulated force to the first, second, and third locations (i.e. the user experience the feedback in the real space upon a collision with objects in virtual space at the first, second, and third locations) (see Fig. 3, Col. 7 35-47).

As to claim 10, Tarr teaches the method of claim 2, wherein the second processor is disposed remotely from the first processor (i.e. the processor is capable of communicating via a network, which means that they are remotely located) (See Fig. 4, Col. 20, Lines 8-23).

As to claim 12, Tarr teaches the method of claim 11, wherein the switch comprises a circular shape(i.e. since the object can be any kind of shape including circles) (see Col. 6, Lines 1-15).

As to claim 13, Tarr teaches the method of claim 11, wherein the switch comprises an eight-way switch (i.e. since the virtual object can move in any

orientation, in can act as a eight-way switch by moving about a z axis, changing positions with respect to the x, y and the diagonal there between forming an eight way switch), the eight-way switch operable to select a channel about a first axis (i.e. the movable channel is with respect to the z-axis) (see Col. 6, Lines 23-29).

As to claim 14, Tarr teaches the method of claim 11, further comprising providing a biasing element proximate to a center of the switch(i.e. intrinsic parameter in the sub-construct that form the switch object exist at the center of the switch object) (see Col. 5, Lines 50-65).

As to claim 15, Tarr teaches the method of claim 11, further comprising providing a detent proximate to a radius of the switch (since the during a collision with the cells (sub-constructs) the user are prevented from penetrate the object, the cell comprises detent that allow limitation of user movement in the virtual space) (see Col 7, Lines 20-34).

As to claim 17, Tarr teaches the switch of claim 16, further comprising:

a third primary channel disposed substantially co-axial with the first primary channel (i.e. the third primary channel can be a virtual scaling channel

about the x-axis, enlarging or shrinking the virtual object) (see Fig 1-3, Col. 6, Lines 24-28);

a fourth primary channel disposed substantially co-axial with the second primary channel (i.e. the fourth primary channel can be a virtual scaling channel about the y-axis, enlarging or shrinking the virtual object) (see Fig 1-3, Col. 6, Lines 24-28);

a third secondary channel disposed proximate to the third primary channel (i.e. the third secondary channel can be a virtual rotating channel that rotates as the x-axis scaling takes place, reorienting the virtual object about the x-axis) (see Fig 1-3, Col. 6, Lines 24-28);

and a fourth secondary channel disposed proximate to the fourth primary channel(i.e. the fourth secondary channel can be a virtual rotating channel that rotates as the y-axis scaling takes place, reorienting the virtual object about the y-axis) (see Fig 1-3, Col. 6, Lines 24-28).

As to claim 18, Tarr teaches the switch of claim 17, wherein the first axis is disposed substantially orthogonal to the second axis (i.e. by definition x and y axis in the Cartesian coordinate system are orthogonal with each other) (see Fig 1-3, Col. 6, Lines 24-28).

As to claim 19, Tarr teaches the switch of claim 16, wherein the first secondary channel is disposed obliquely to the first primary channel (i.e. the secondary channel can be a object movement path that is diagonal in relation to the x-axis, and therefore oblique to the first primary channel); and the second secondary channel is disposed obliquely to the second primary channel (i.e. the secondary channel can be a object movement path that is diagonal in relation to the y-axis, and therefore oblique to the second primary channel) (see Fig. 6, Lines 1-30).

As to claim 20, Tarr teach the switch of claim 16, wherein the first secondary channel is disposed substantially orthogonal to the first primary channel (i.e. the secondary channel can be a object movement path that is parallel in relation to the x-axis, with variable y and z coordinate, and therefore substantially orthogonal to the first primary channel); and the second secondary channel is disposed substantially orthogonal to the second primary channel (i.e. the secondary channel can be a object movement path that is parallel in relation to the y-axis, with variable x and z coordinate, and therefore substantially orthogonal to the second primary channel) (see Fig. 6, Lines 1-30).

As to claim 21, Tarr teaches the switch of claim 17, wherein the third secondary channel is disposed obliquely to the third primary channel (i.e. the third secondary channel can be a object rotation path that is diagonal in relation

to the x-axis, with variable y and z coordinate, and therefore the third secondary channel can be substantially oblique to the third primary channel); and the fourth secondary channel is disposed obliquely to the fourth primary channel (i.e. the fourth secondary channel can be a object rotation path that is diagonal in relation to the y-axis, with variable x and z coordinate, and therefore the fourth secondary channel can be substantially oblique to the fourth primary channel) (see Fig. 6, Lines 1-30).

As to claim 22, Tarr teaches the switch of claim 17, wherein the third secondary channel is disposed substantially orthogonal to the third primary channel (i.e. the third secondary channel can be a object rotation path that is parallel in relation to the x-axis, and therefore the third secondary channel can be substantially orthogonal to the third primary channel); and the fourth secondary channel is disposed substantially orthogonal to the fourth primary channel (i.e. the fourth secondary channel can be a object rotation path that is parallel in relation to the y-axis, and therefore the fourth secondary channel can be substantially orthogonal to the fourth primary channel) (see Fig. 6, Lines 1-30).

5. Claims 16-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Martin et al. (US Patent: 6,563,487).

As to claim 16, Martin teaches a switch (i.e. entire control device 10) comprising:

a first primary channel (i.e. the channel formed by the up directional key of the directional keypad 18 which can be understood as a channel for the control input) disposed about a first axis (y-axis);

a second primary channel (i.e. the channel formed by the right directional key of the directional keypad 18 which can be understood as a channel for the control input) disposed about a second axis (x-axis) (see Fig. 1a, Col. 4, Lines 14-40);

a first secondary channel disposed proximate to the first primary channel (i.e. the channel formed by the vertical movement upward of the joystick 26 which also provide an up input which is approximate to the first primary channel) (see Fig. 1a, Col. 5, Lines 55-56);

and a second secondary channel disposed proximate to the second primary channel (i.e. the channel formed by the horizontal movement to the right of the joystick 26 which also provide an right input which is approximate to the second primary channel) (see Fig. 1a, Col. 5, Lines 55-56).

As to claim 17, Martin teaches the switch of claim 16, further comprising:

a third primary channel disposed substantially co-axial with the first primary channel (i.e. the channel formed by the down directional key of the directional keypad 18 which can be understood as a channel for the control input that is on the same axis as the first primary channel) disposed about a first axis (y-axis); (see Fig. 1a, Col. 4, Lines 14-40);

a fourth primary channel disposed substantially co-axial with the second primary channel (i.e. the channel formed by the left directional key of the directional keypad 18 which can be understood as a channel for the control input that is on the same axis as the second primary channel) (see Fig. 1a, Col. 4, Lines 14-40);

a third secondary channel disposed proximate to the third primary channel i.e. the channel formed by the vertical movement downward of the joystick 26 which also provide an up input which is approximate to the third primary channel) (see Fig. 1a, Col. 5, Lines 55-56);

and a fourth secondary channel disposed proximate to the fourth primary channel (i.e. the channel formed by the horizontal movement to the left of the joystick 26 which also provide an right input which is approximate to the fourth primary channel) (see Fig. 1a, Col. 5, Lines 55-56).

As to claim 18, Martin teaches the switch of claim 17, wherein the first axis is disposed substantially orthogonal to the second axis (i.e. by definition x and y

axis in the Cartesian coordinate system are orthogonal with each other) (see Fig 2a, Col. 12, Lines 17-20).

As to claim 19, Martin teaches the switch of claim 16, wherein the first secondary channel is disposed obliquely to the first primary channel (i.e. the first secondary channel can be formed by the movement of the joystick diagonally up and to the right which is oblique to the first primary channel) (see Fig. 1a, Col. 5, Lines 55-56);

and the second secondary channel is disposed obliquely to the second primary channel (i.e. the second secondary channel can be formed by the movement of the joystick diagonally down and to the left which is oblique to the second primary channel) (see Fig. 1a, Col. 5, Lines 55-56).

As to claim 20, Martin teaches the switch of claim 16, wherein the first secondary channel is disposed substantially orthogonal to the first primary channel (i.e. the first secondary channel can be formed by the movement of the joystick horizontally to the right which is orthogonal to the first primary channel) (see Fig. 1a, Col. 5, Lines 55-56);

and the second secondary channel is disposed substantially orthogonal to the second primary channel (i.e. the second secondary channel can be formed

by the movement of the joystick vertically up which is orthogonal to the second primary channel) (see Fig. 1a, Col. 5, Lines 55-56).

As to claim 21, Martin teaches the switch of claim 17, wherein the third secondary channel is disposed obliquely to the third primary channel (i.e. the third secondary channel can be formed by the movement of the joystick diagonally up and to the left which is oblique to the third primary channel) (see Fig. 1a, Col. 5, Lines 55-56);

and the fourth secondary channel is disposed obliquely to the fourth primary channel (i.e. the fourth secondary channel can be formed by the movement of the joystick diagonally down and to the right which is oblique to the fourth primary channel) (see Fig. 1a, Col. 5, Lines 55-56).

As to claim 22, Martin teaches the switch of claim 17, wherein the third secondary channel is disposed substantially orthogonal to the third primary channel (i.e. the third secondary channel can be formed by the movement of the joystick horizontally to the left which is orthogonal to the third primary channel) (see Fig. 1a, Col. 5, Lines 55-56);

and the fourth secondary channel is disposed substantially orthogonal to the fourth primary channel (i.e. the fourth secondary channel can be formed by

the movement of the joystick vertically down which is orthogonal to the fourth primary channel) (see Fig. 1a, Col. 5, Lines 55-56).

Conclusion

Rosenberg (U.S.P.G. PUB: 2002/0142701) is cited to teach a directional controller with detent that has haptic feedback. Vassallo et al. (U.S. Patent 7,038,667) is cited to teach a multiple directional control system similar the present application.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Calvin Ma whose telephone number is (571) 270-1713. The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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August 13, 2007

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